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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/528,838	03/23/2005	Shigeo Okuno	2005-0438A	8544

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EXAMINER	
TORRES RUIZ, JOHALI ALEJANDRA	
ART UNIT	PAPER NUMBER
2838	
MAIL DATE	DELIVERY MODE
05/05/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/528,838	OKUNO, SHIGEO	
	Examiner	Art Unit	
	JOHALI A. TORRES RUIZ	2838	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *24 March 2008*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,2 and 5* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,2 and 5* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *23 March 2005* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *3/25/2008*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1-2 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gali et al. (U.S. Patent Number Re. 35,643), Chiang et al. (U.S. Patent Number 6,479,966), Kondo et al. (U.S. Patent Number 6,730,428), Gali et al. (U.S. Patent Number 5,633,575, hereinafter '575) and further in view of Gelbman et al. (U.S. 6,184,650).

4. Claim 1: Gali teaches a method for removing membranous lead sulfate deposited on electrodes of a lead acid battery due to sulfation (Col.1, Lines 41-44), featured by applying a pulse current having a short pulse width for dissolving the surface layer of said membranous lead surface deposited on said electrodes of said battery (Col.1, Lines 59-67) (Col.2, Lines 1-4) (Col.4, Lines 21-26) (It inherently has current).

Gali does not explicitly teach the pulse is a negative pulse nor that the pulse frequency is of 8000 to 12000 Hz. Gali does not explicitly teach a current value in a range of 10 to 120mA. Gali does not explicitly teach the pulse brings about a conductor skin effect.

In the case where the claimed ranges "overlap or lie inside ranges disclosed by the prior art" a prima facie case of obviousness exists. In re Wertheim, 541 F.2d 257, 191 USPQ 90 (CCPA 1976); In re Woodruff, 919 F.2d 1575, 16 USPQ2d 1934 (Fed. Cir. 1990) (The prior art taught carbon monoxide concentrations of "about 1-5%" while the claim was limited to "more than 5%." The court held that "about 1-5%" allowed for concentrations slightly above 5% thus the ranges overlapped.); In re Geisler, 116 F.3d1465, 1469-71, 43 USPQ2d 1362, 1365-66 (Fed. Cir. 1997) (Claim reciting thickness of a protective layer as falling within a range of "50 to 100 Angstroms" considered prima facie obvious in view of prior art reference teaching that "for suitable protection, the thickness of the protective layer should be not less than about 10 nm [i.e., 100 Angstroms]." Gail teaches that to apply a pulse peaking at a necessary voltage duration of said pulse should be less than 5μs (Col.1, Lines 55-64).

Chiang teaches applying a negative pulse to a battery (Col.4, Lines 44-48).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have had applied a negative pulse to a battery in Gail to facilitate the removal of lead acid compound from the surface of an electrode (Col.4, Lines 57-58) as taught in Chiang.

Kondo teaches applying a pulse current with a frequency of 10kHz to a battery (Col.2, Lines 36-40).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have had applied a pulse current with a frequency of 10kHz to a

battery in Gail to prevent the occurrence of sulfation (Col.2, Lines 36-40) as taught in Kondo.

'575 teaches a pulse bringing a conductor skin effect (Col.1, Lines 54-61) (Col.3, Lines 21-25).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have had a pulse bring about a conductor skin effect on Gail to enhance the cleaning of the battery plates (Col.3, Lines 21-25) as taught in '575.

Gelbman teaches patented techniques for reducing sulfation of lead-acid battery plates use a pulse of about 100mA (Col.1, Lines 45-54).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have had the teachings of Gelbman in the device of Gail to have had the crystals changed and the molecules dissolve back into the solution and create an active electrolyte (Col.1, Lines 54-57).

5. Claim 2: Gali, Chiang, Kondo, '575 and Gelbman teach the limitations of claim 1 as discussed above. Gali teaches charging said lead acid battery while or after applying said pulse current to said battery (Col.4, Lines 32-35), to resolve the lead sulfate dissolved by applying said pulse current (Col1, Lines 18-20) (after the pulse dissolves the lead deposited on the electrode the lead resurfaces as lead dioxide).

6. Claim 5: Gali, Chiang, Kondo, '575 and Gelbman teach the limitations of claim 1 as discussed above. In the case where the claimed ranges "overlap or lie inside ranges disclosed by the prior art" a prima facie case of obviousness exists. In re Wertheim, 541 F.2d 257, 191 USPQ 90 (CCPA 1976); In re Woodruff, 919 F.2d 1575, 16 USPQ2d

1934 (Fed. Cir. 1990) (The prior art taught carbon monoxide concentrations of "about 1-5%" while the claim was limited to "more than 5%." The court held that "about 1-5%" allowed for concentrations slightly above 5% thus the ranges overlapped.); In re Geisler, 116 F.3d1465, 1469-71, 43 USPQ2d 1362, 1365-66 (Fed. Cir. 1997) (Claim reciting thickness of a protective layer as falling within a range of "50 to 100 Angstroms" considered prima facie obvious in view of prior art reference teaching that "for suitable protection, the thickness of the protective layer should be not less than about 10 nm [i.e., 100 Angstroms]." Gail teaches that to apply a pulse peaking at a necessary voltage a duration of said pulse should be less than 5μs. Peterson, 315 F.3d at 1330, 65 USPQ2d at 1382 ("The normal desire of scientists or artisans to improve upon what is already generally known provides the motivation to determine where in a disclosed set of percentage ranges is the optimum combination of percentages.") Someone of ordinary skill in the art at would have the motivation to determine where in the disclosed range of less than 5μs the optimum results would be obtained.

Response to Arguments

7. In response to applicant's argument that applicant has discovered that by utilizing a negative pulse current having a negative pulse width of less than 1μs the membranous lead sulfate can be sequentially dissolved into flue particles, thereby preventing flaking. And that in view of the foregoing, Applicant submits that even though Gali teaches the application of a pulse width 'less than 5μs ", due to the new and unexpected results that are obtained by utilizing a pulse current having a pulse width of less than 1μs, that a prima facie ease of obviousness has been rebutted in accordance

with MPEP 2144.05(III). The optimization of ranges has been found to support a prima facie case of obviousness. "[W]here the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation." In re Aller, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955) (Claimed process which was performed at a temperature between 40°C and 80°C and an acid concentration between 25% and 70% was held to be prima facie obvious over a reference process which differed from the claims only in that the reference process was performed at a temperature of 100°C and an acid concentration of 10%.); see also Peterson, 315 F.3d at 1330, 65 USPQ2d at 1382 ("The normal desire of scientists or artisans to improve upon what is already generally known provides the motivation to determine where in a disclosed set of percentage ranges is the optimum combination of percentages."). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have had experimented with pulse widths inside the range of less than 5μs known in the art to have found the optimum pulse width range.

Conclusion

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to JOHALI A. TORRES RUIZ whose telephone number is (571)270-1262. The examiner can normally be reached on M- Alternating F 7:30am-5pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Akm Ullah can be reached on (571) 272-2361. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Akm Enayet Ullah/
Supervisory Patent Examiner, Art Unit 2838

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JAT